

FIG 1A (Encoder)

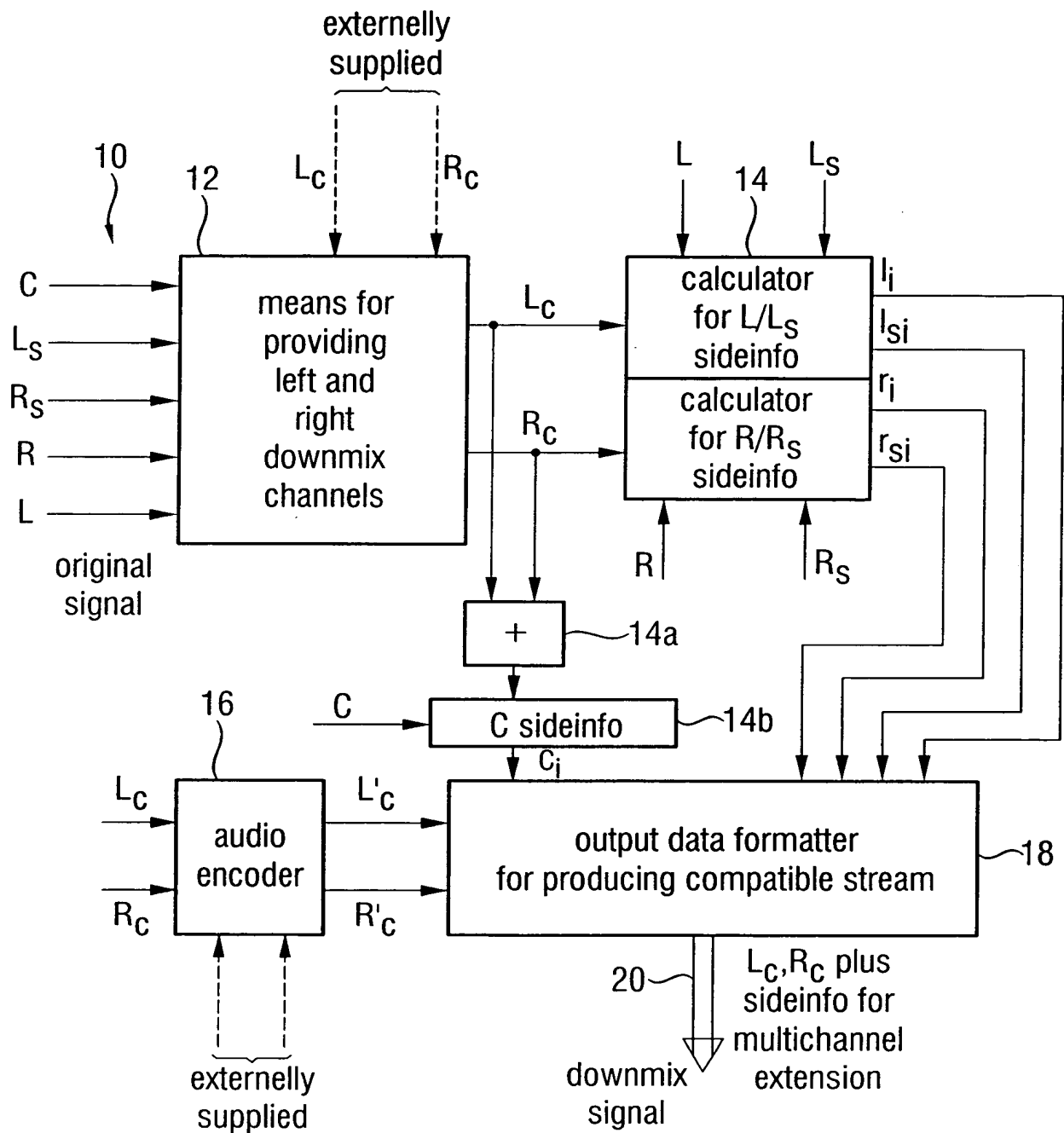


FIG 1B

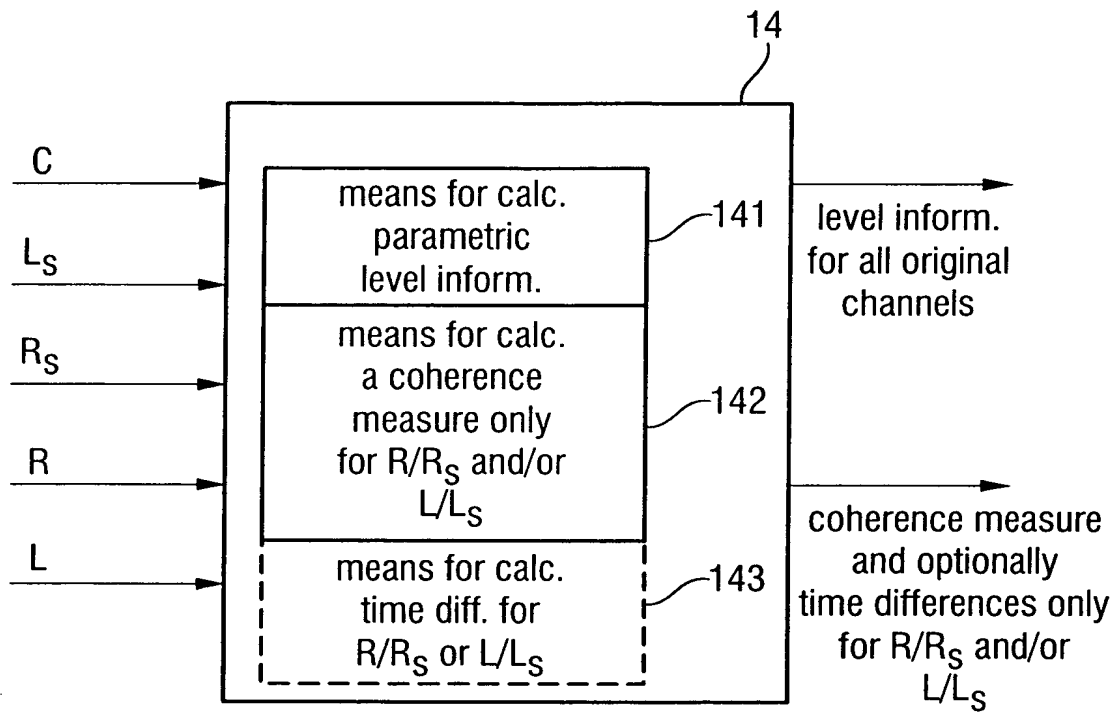


FIG 2A (Decoder)

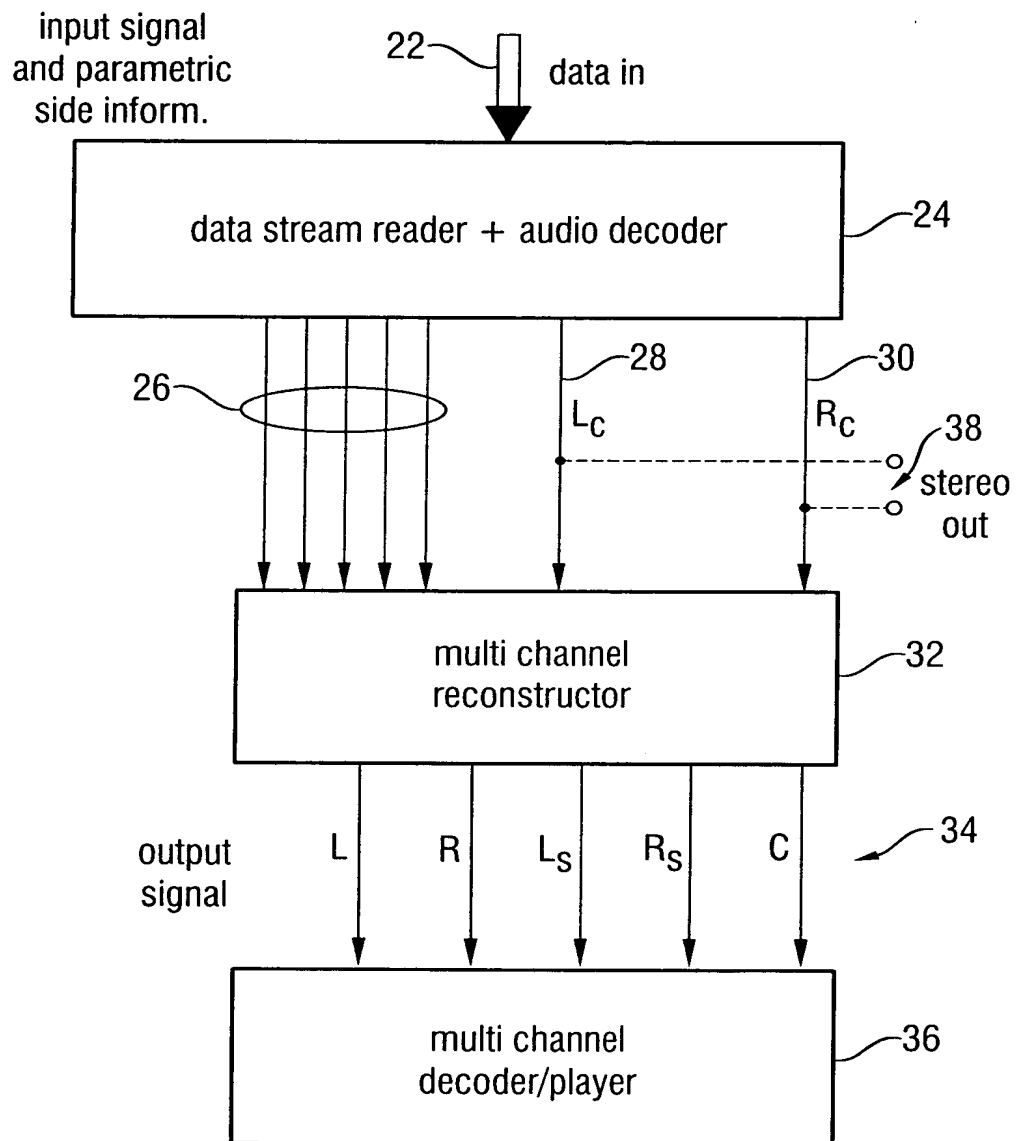


FIG 2B

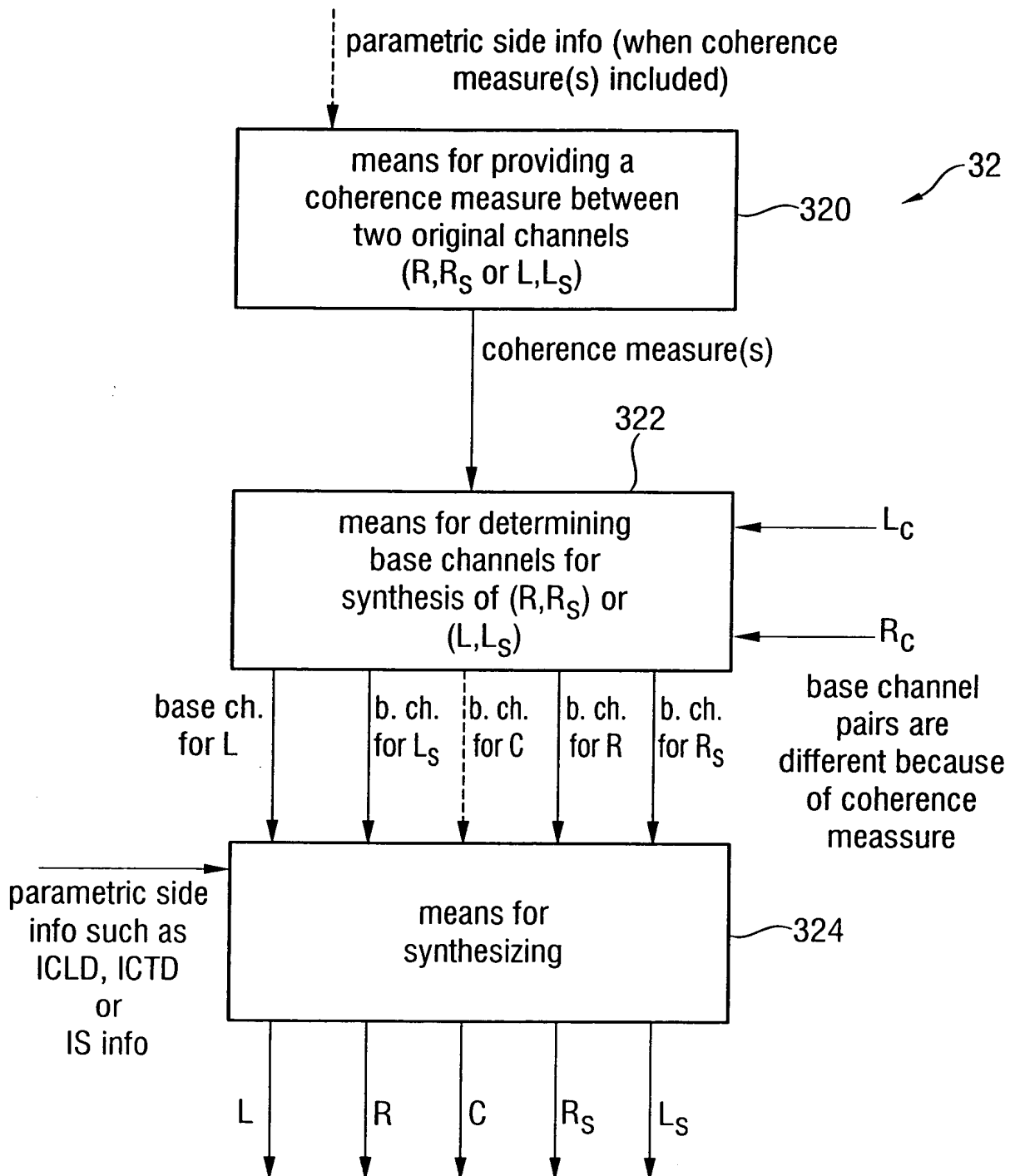


FIG 2C

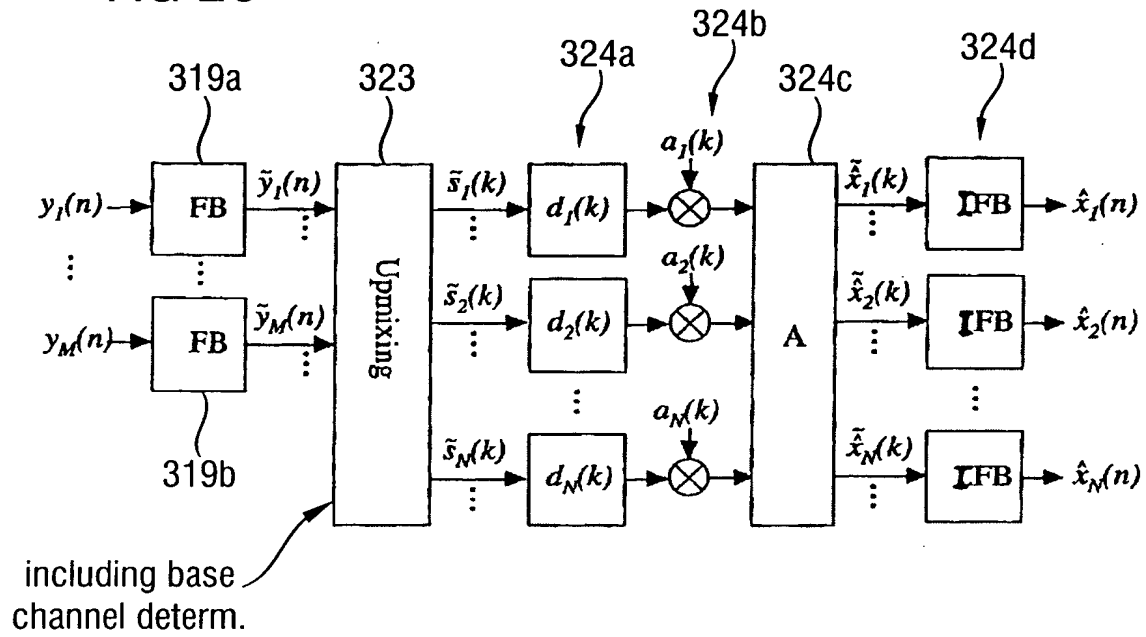
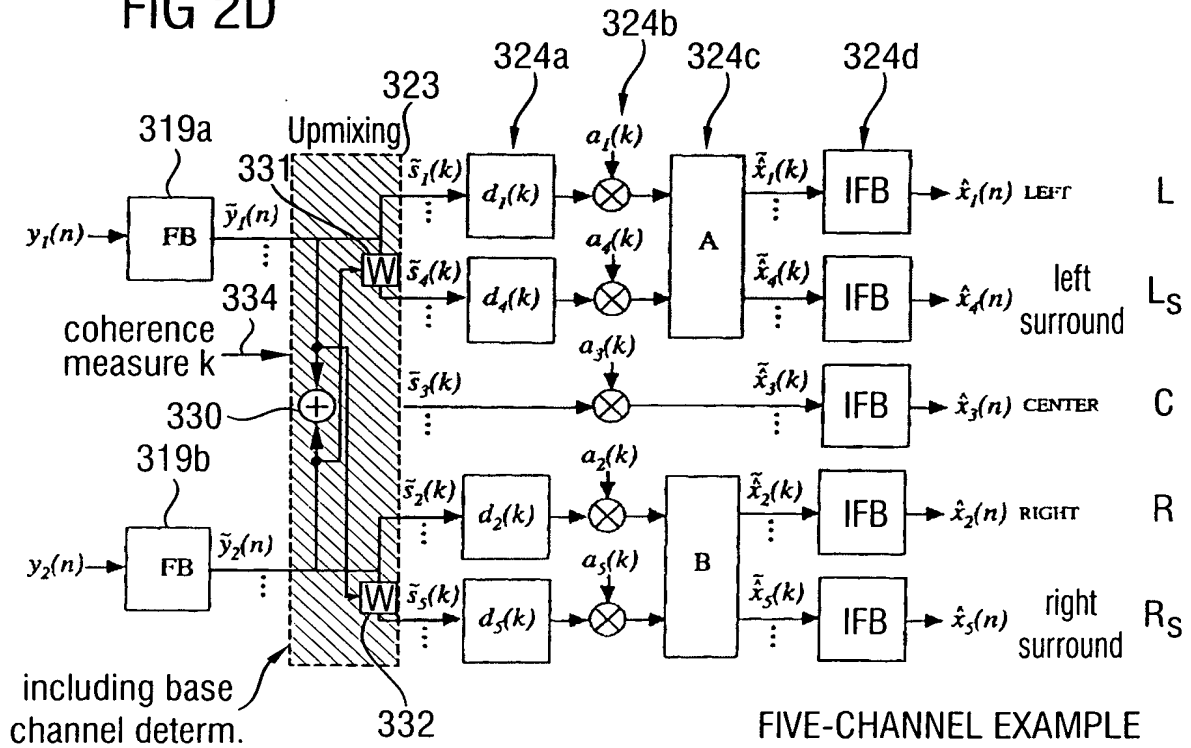


FIG 2D



FIVE-CHANNEL EXAMPLE

FIG 2E (encoder side)

means for determining
coherence measure

$$cc(x,y) = \frac{\sum x_i \cdot y_i}{\sqrt{\sum x_i^2} \cdot \sqrt{\sum y_i^2}}$$

cc: coherence measure
(cross correlation)

x_i : sample at time
instance i of first
original channel

y_i : sample at time
instance i of 2nd
original channel

FIG 2F (decoder side)

base channel for left (L) output channel: $l \triangleq L_c$

base channel for rear left (Ls) output ch.: $l + \alpha \cdot r \triangleq L_c + \alpha \cdot R_c$

$$k = cc(l, l + \alpha \cdot r)$$

$$\frac{\sum l \cdot [l + \alpha \cdot r]}{\sqrt{\sum l^2} \cdot \sqrt{\sum [l + \alpha \cdot r]^2}} = k$$

$$-1 \leq k \leq 1$$

α : weighting factor
(to be determined)

l : left input channel

r : right input channel

k : coherence measure
(time-varying, transmitted
as side information)

$$\alpha_{1,2} = \frac{-B \pm \sqrt{B^2 - 4AC}}{2A}$$

wherein: $L = \sum l^2$ $R = \sum r^2$ $C = \sum l \cdot r$; and

$$A = C^2 - k^2 LR \quad B = 2LC(1 - k^2) \quad C = L^2(1 - k^2).$$

FIG 2G

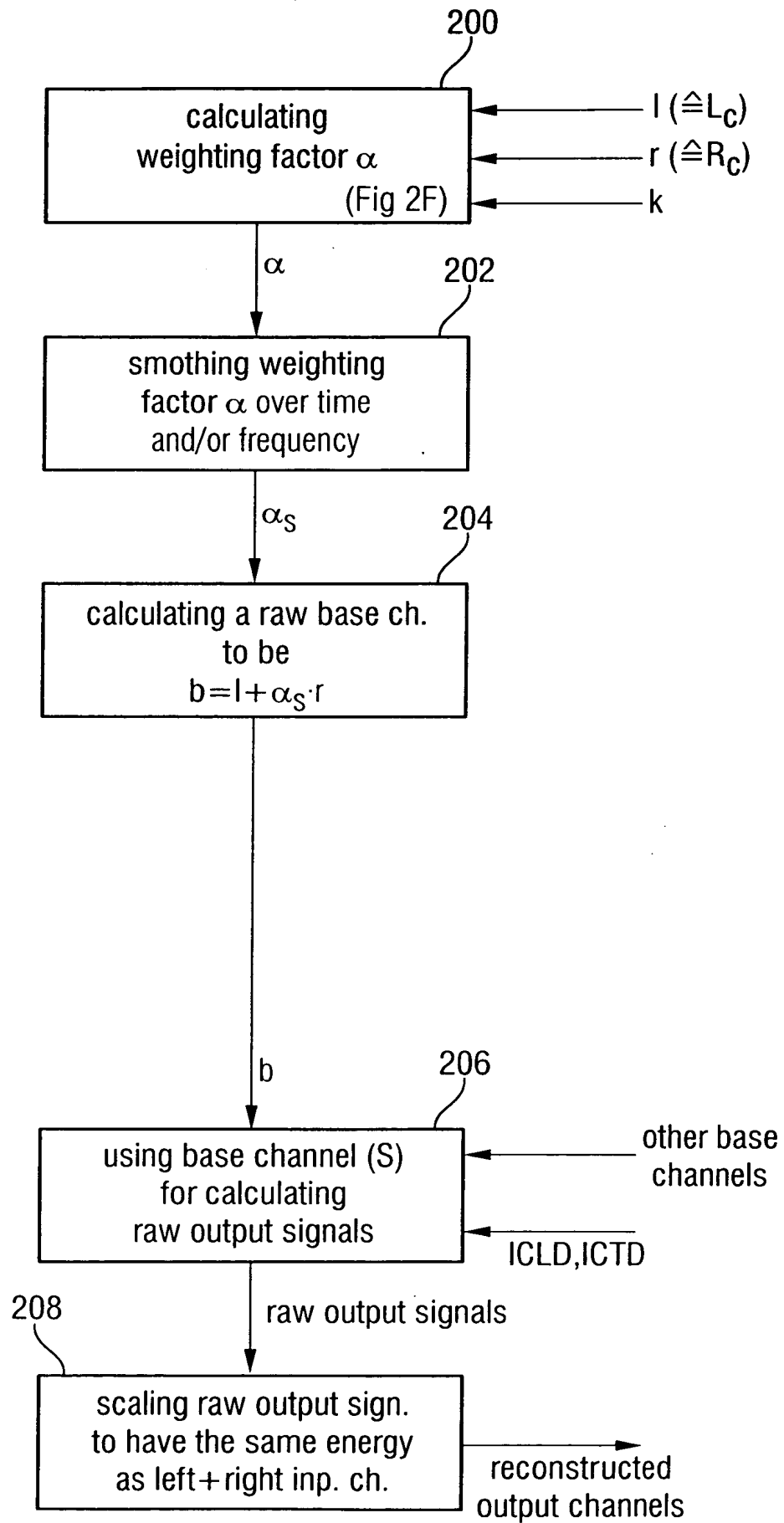


FIG 3A

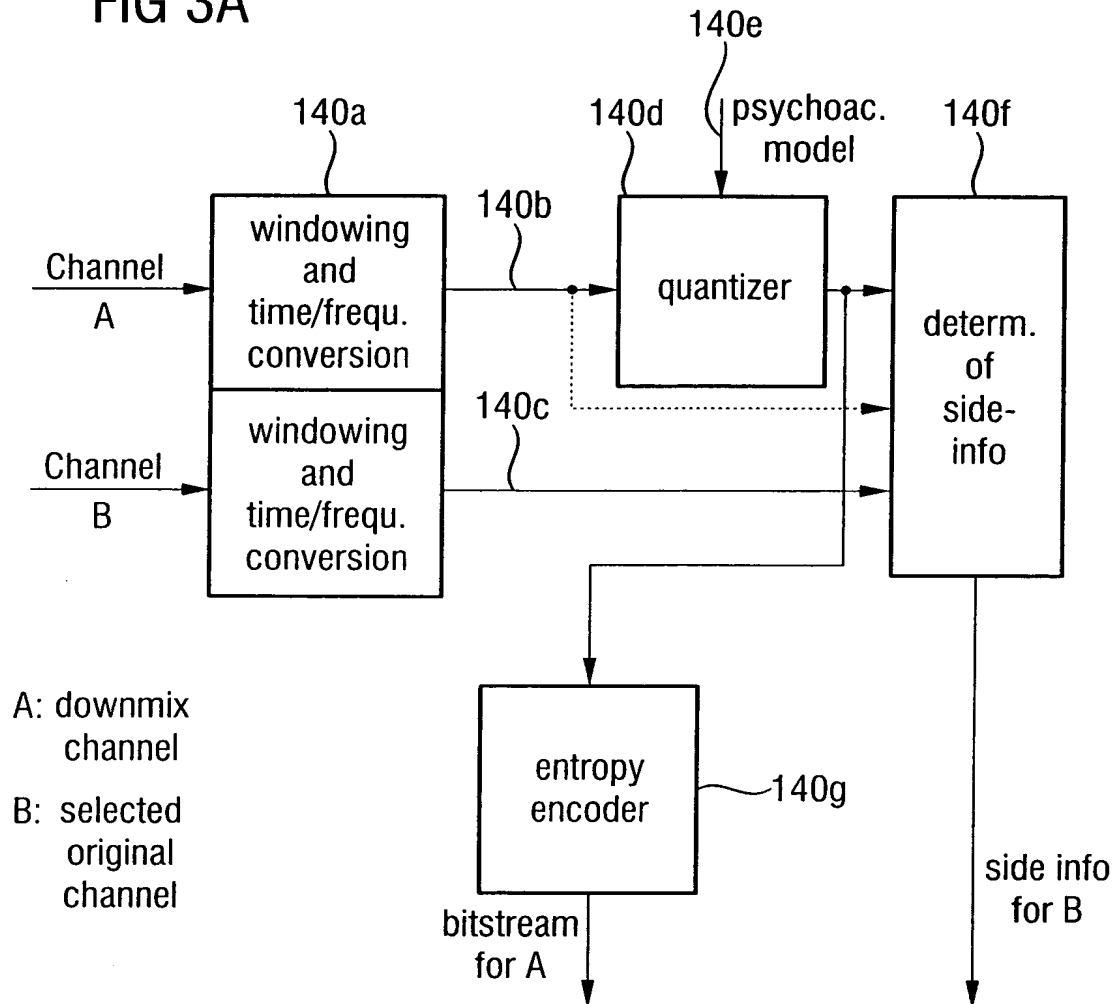


FIG 3B

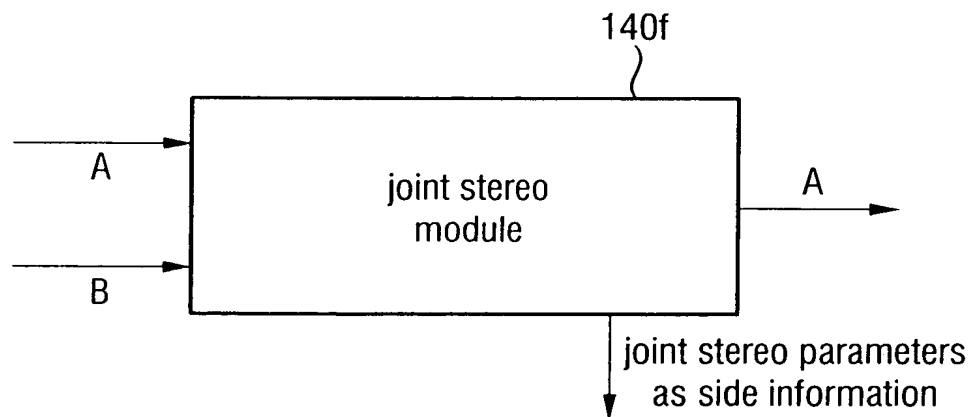


FIG 4 (encoder side)

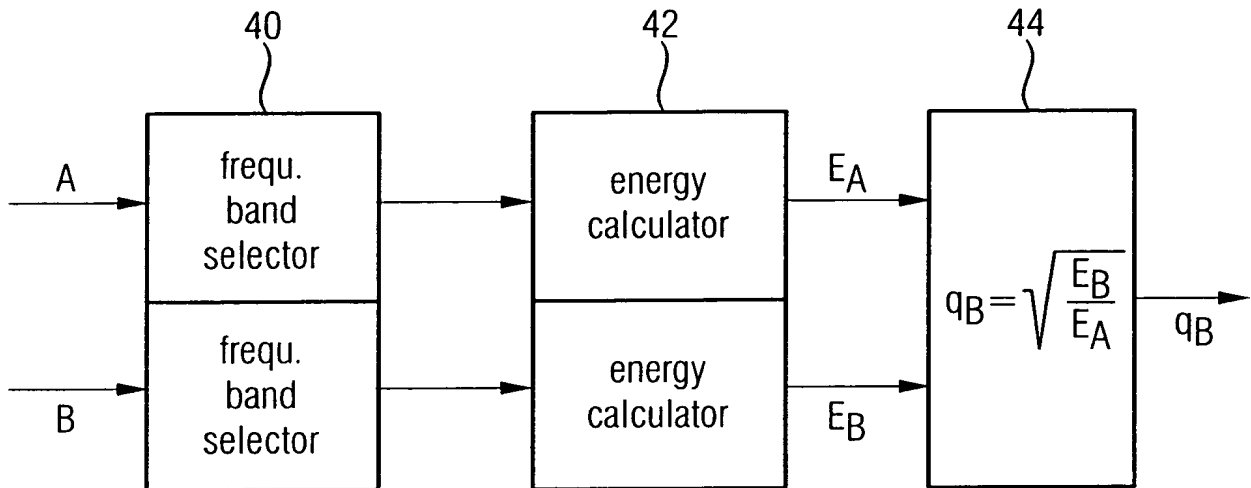


FIG 5 (decoder side)

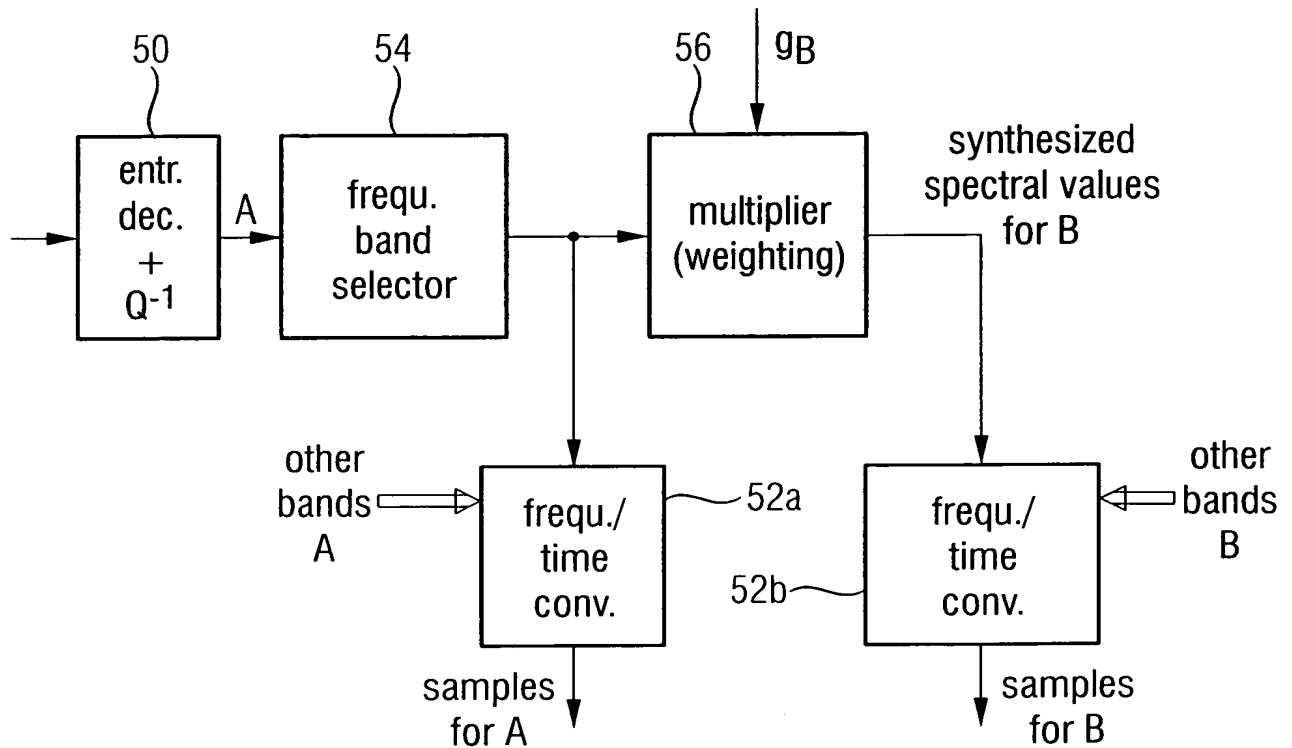


FIG 6

DOWNMIX

$L_c = t \cdot [L + a \cdot L_s + b \cdot C]$
$R_c = t \cdot [R + a \cdot R_s + b \cdot C]$

all signals are
time domain signals

$a, b, t \leq 1$
preferred: $a = b = 0,7$
or: $a = 0,5$; $b = 0,7$

FIG 7

ch. side info	CHANNEL B	CHANNEL A
	side infos/parameters for:	are determined using:
l_j	L	L_c
l_{si}	L_s	L_c
r_j	R	R_c
r_{si}	R_s	R_c
c_j	C	$L_c + R_c$

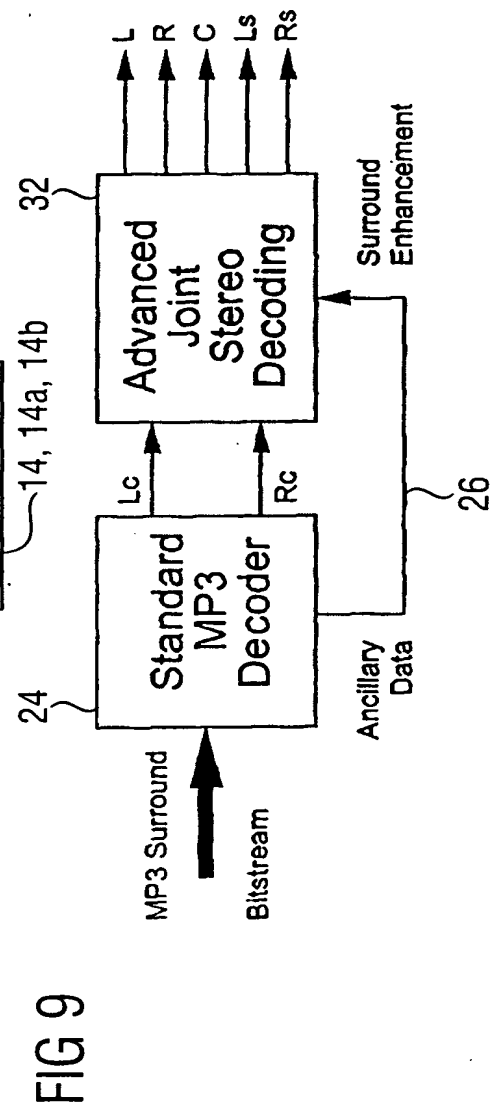
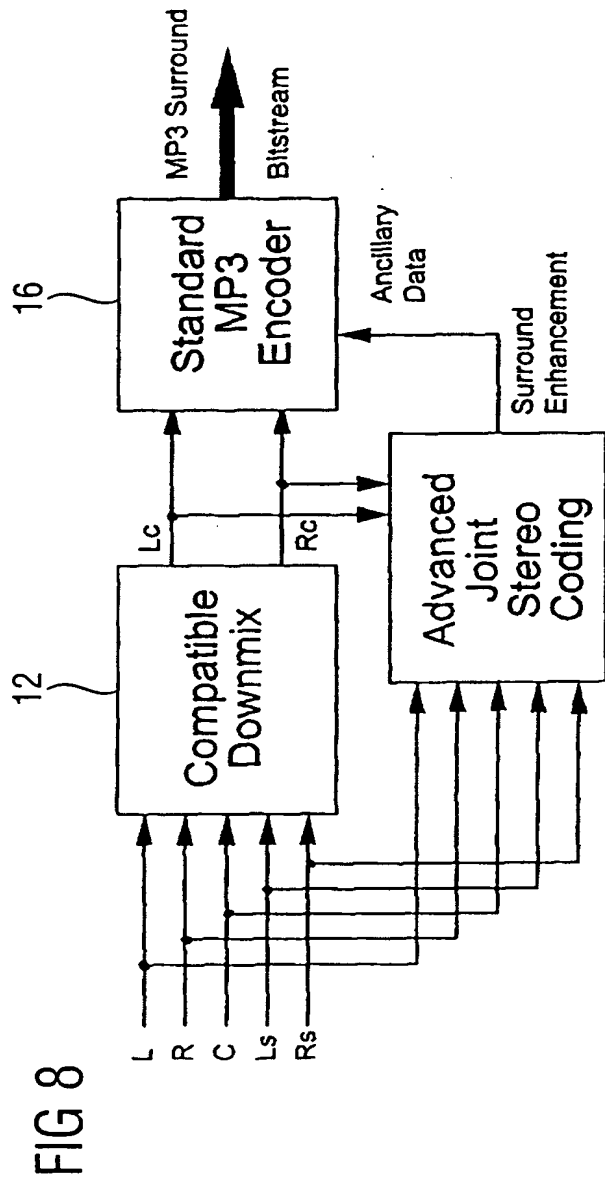


FIG 10 (Prior Art)

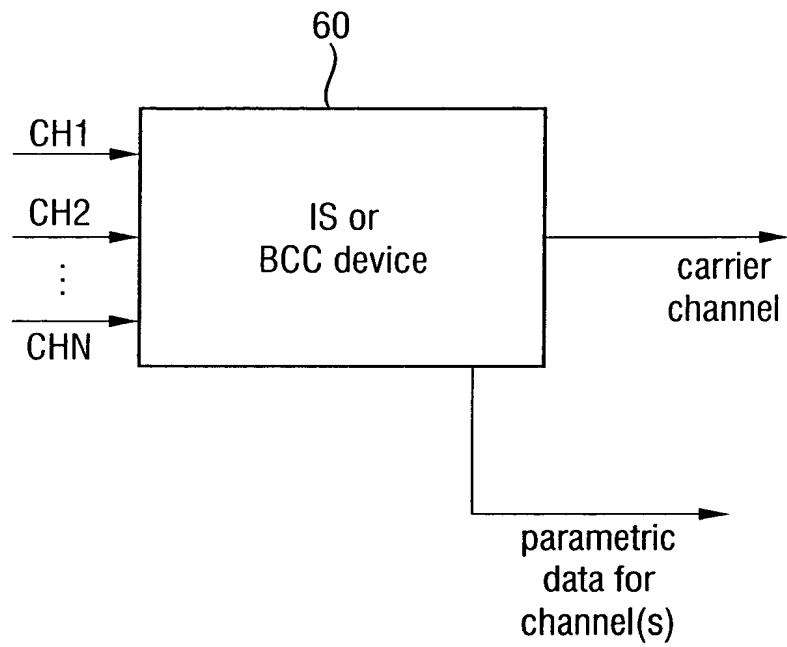


FIG 11 (Prior Art)

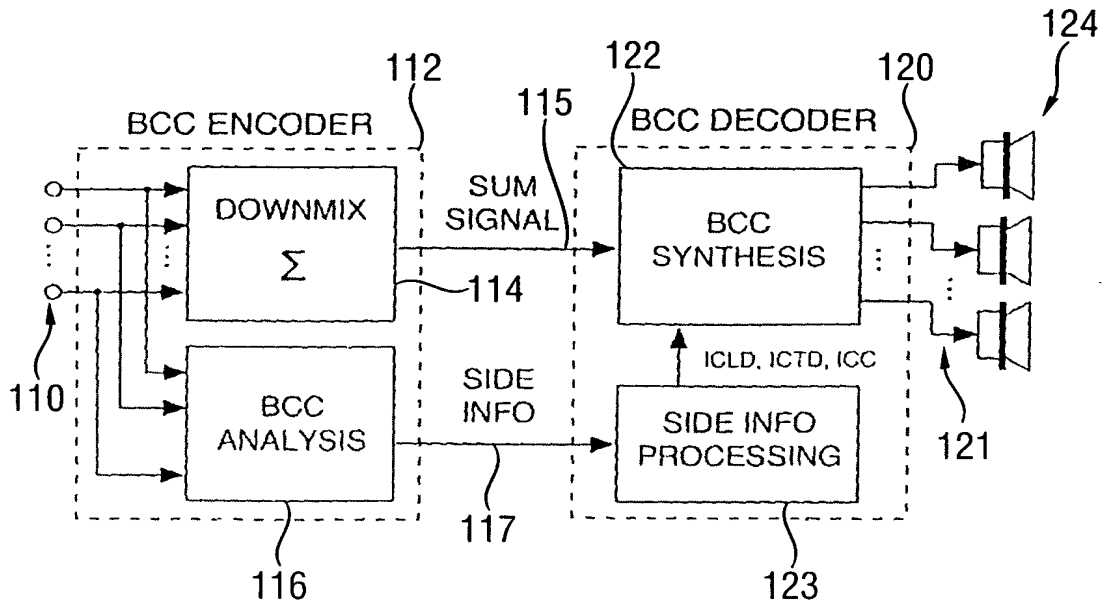


FIG 12 (Prior Art)

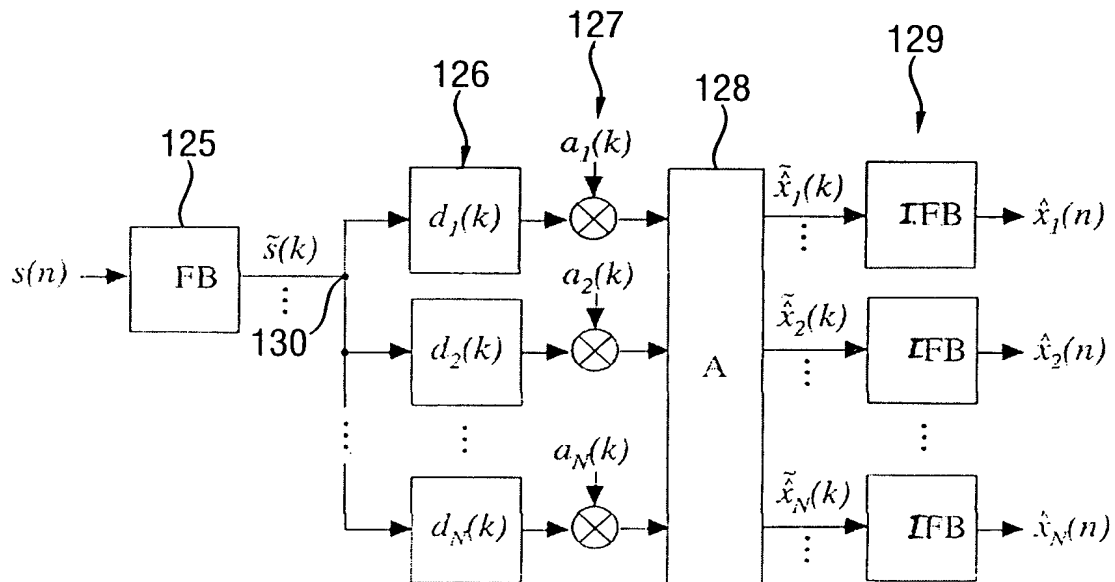


FIG 13 (Prior Art)

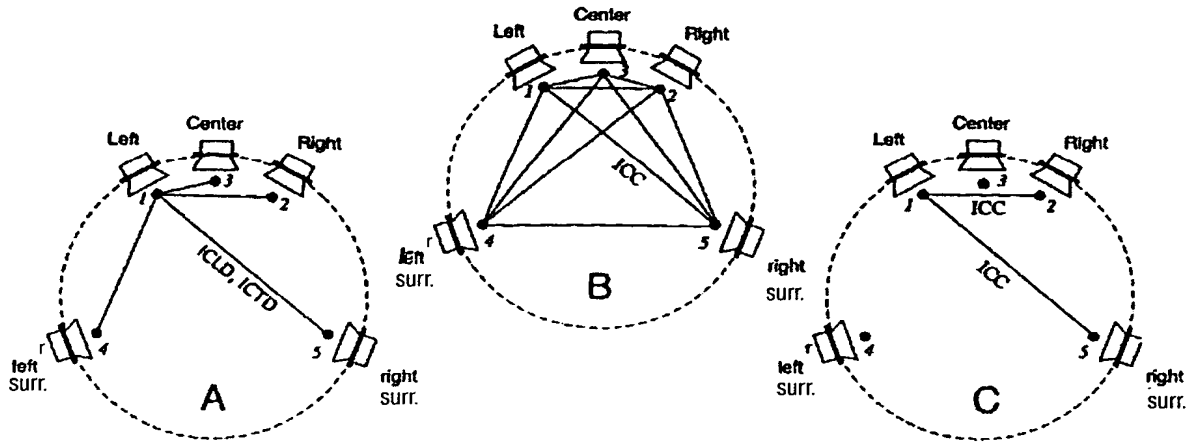


FIG 14A

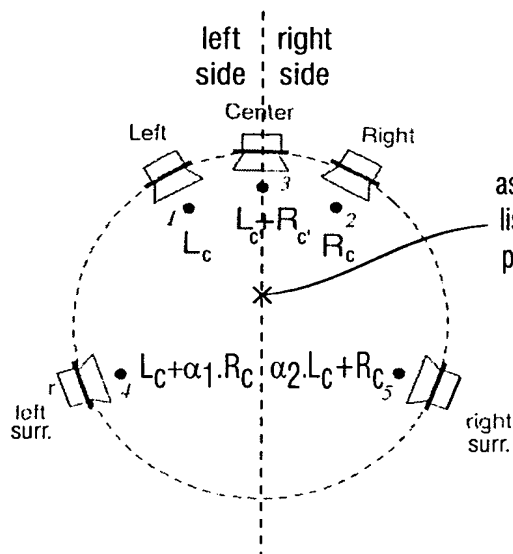


FIG 14B

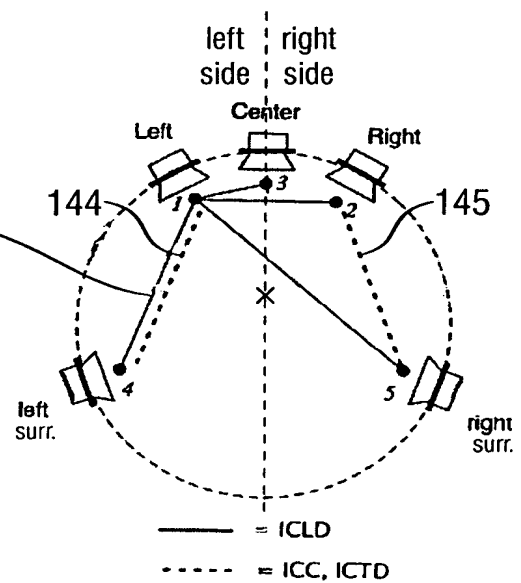


FIG 15A

Base channels:

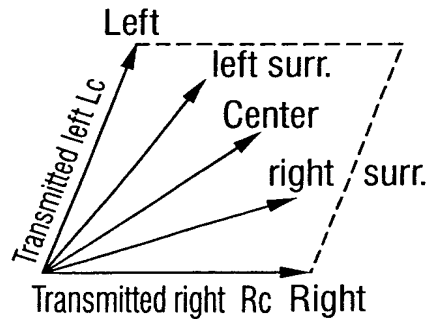
left=L

right=R

center=L+R

rear left=L+0.7R

rear right=R+0.7L



most
independence
between
front left
and front
right

FIG 15B

Base channels:

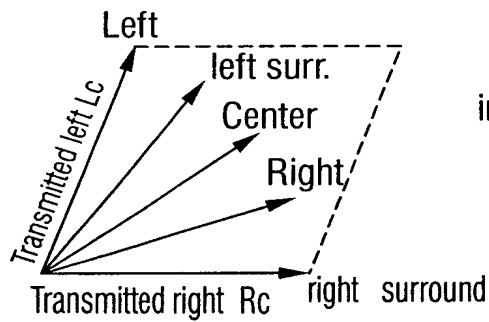
left=L

right=R+0.7L

center=L+R

rear left=L+0.7R

rear right=R



most
independence
between
left
and rear
right